EFFECT OF MOOC ON KNOWLEDGE ACQUISITION, RETENTION & PERCEPTION OF PUPIL TEACHERS IN PEDAGOGY OF SCIENCE

A

Synopsis

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Supervisor	**Researcher**
Dr.Amit Gautam	Ashish Verma

HEAD
M.Ed./M.Phil./Ph.D.

DEAN
Faculty of Education

DEPARTMENT OF PEDAGOGICAL SCIENCE
FACULTY OF EDUCATION
DAYALBAGH EDUCATIONAL INSTITUTE (DEEMED UNIVERSITY)
DAYALBAGH, AGRA-282005

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1.0.0 Introduction

Educational Systems around the world are changing rapidly as a result of technological advancement. The sphere of education has been influenced by the twin phenomena of globalization and liberalization. The rapid technological changes affect many aspects of human lives, including the way one learns. Therefore the socio-economic development of a nation is dependent on the quality and type of education that is offered from the school level to the University level. The present day higher education needs to be more comprehensive, innovative and quality oriented.

Higher education is bound to go for the unavoidable shift from the culture of print to a culture of digital technology, which affects not only teaching, learning and research but the whole of university life. The new technologies are dominating the education scenario in the developed countries. However, there are some limiting factors in their widespread use in the less developed countries. The need of the 21st century will be to exploit the information highways to the fullest possible extent. Economic development will depend to a large extent on creating and optimal use of the technological infrastructure. Countries which would harness the power of multimedia communication for education and training purposes will be the economic powers of the next century.

Information and Communication Technology (ICT) has arrived with a big bang. The very nature of teaching, learning and research has to depend also on electronic data, over and above the print material. Conduct of research now requires co-operative resource sharing and networking of local, national and global resources. Universities and colleges shall have to share the resources and change their nature of depending exclusively on their own limited resources.

The intelligent use of Information and Communication Technology (ICT) devices in transforming higher education requires that there should be changes in the concepts and methods that are presently followed in research, teaching and learning in most institutes, universities and colleges of higher learning. The present top-down and traditional approach cannot be incorporated in the democratization of educational teaching and learning that is the realm of computers and networks. The course structure and their curriculum needs to become more flexible with the student having the control of mixing and matching to his taste and

needs. This in turn requires that the administrative machinery, the teaching community, the student group and the researchers, change their value systems on learning, education, and the social need of education. All this obviously cannot come about in a day. It needs time and more importantly the social and political will which alone can provide the economic wherewithal necessary for implementing and sustaining the use of the changing technology for transformation of higher education. Technologies offer major opportunities to higher education to enhance the quality, accessibility and cost effectiveness of university teaching. Electronic mail, computer conferencing, and the World Wide Web are strengthening contacts between students and academic staff. Technologies provide increased opportunities for interaction which can usefully provide for joint problem solving, shared learning and enhance face-to-face contact. Educational technologies have the capacity to bring other considerable benefits to teaching and learning. Benefits include the capacity to illustrate difficult concepts with animated or video sequences, to provide simulations of corporate situations or scientific experiments, to allow new information search methods and new forms of teaching configurations and student/academic interchange.

ICTs have been changing the scenario of education. The classroom is no more without bounds advances not just a feeling of prosperity and produces a home-like environment and its inside is in fact all around prepared and intended for successful learning too. The introduction of technology has completely changed the face of teaching-learning process. Teaching is not what it was. In the modern world of education, it is difficult to imagine a system of education without ICT. It has a prodigious impact on education. The information and communication technologies are now essential for the functioning of educational institutions. The integration of ICTs in teaching in general and teacher education, in particular, is the need of the day. Its adequate recognition and fulfillment of relevant needs are crucial for integration and effective utilization of quality education programs. The use of ICTs can make substantial changes both for teaching and training mainly in two ways. Firstly, the rich representation of information changes learners perception and understanding of the context. Secondly the vast distribution and easy access to information can change the relationship between teachers and learners. ICTs can also provide powerful support for educational innovations. The face of the classroom is changing. The teachers should prepare to keep up

with technology utility into classroom. ICT is not only an essential tool for teachers in their day to day work, but it also offers them opportunities for their own professional development. ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies - scattered and rural populations, groups traditionally excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time constraints are unable to enroll on campus.

The Twelfth Five Year Plan (2012-2017) states "ICT can potentially make significant difference in improving quality. The National Policy of ICT in School Education envisions and provides for the development of a holistic framework of ICT support in the school system. This would enable comprehensive technology enablement of the school education sector." It also suggested for creating provisions for ICT in classrooms or portable facilities like a nootbook / laptop/ iPad and a projector with rechargeable battery, and implement ICT-integrated education.

The Indian OER (Open Educational Resources) initiative, NPTEL (National Programme on Technology Enhanced Learning), a collaborative initiative of the seven Indian Institutes of Technology (IITs) and the Indian Institute of Science, Bangalore with financial support from GOI was launched in 2003 with its objectives of creating curriculum material in higher education in engineering and science. It provides access to recorded video lectures of different engineering and science disciplines which are hosted on YouTube, Met cafe, 'Sakshat' and on NPTEL portal (Das, 2011). After that an Indian specific MOOC platform termed as "SWAYAM" (Study Webs of Active-Learning for Young Aspiring Minds) is launched by GOI for providing MOOCs.

The UGC has made it mandatory for all universities to bring amendments to their respective ordinances and rules by August 19 to facilitate transfer of credits of their students for the degree programmes to be offered under Swayam, a massive online open courses (MOOCs) platform.

The higher education regulator has notified the UGC (Credit Framework for Online Learning Courses through Swayam) Regulation, 2016, recently to ensure that Swayam takes off soon after it is launched as

the Human Resources Development Ministry races against time to complete all preparations for the roll out of India first Moocs platform. The programme, which seeks to fill the gap created by the acute shortage of quality teachers in the country's higher educational institutions, is likely to be dedicated to the nation by Prime Minister Narendra Modi on August 15. The Swayam will offer a virtual class room to students with structured lectures by subject experts. "An institution can only allow up to 20% of the total courses being offered in a particular programme in a semester through the online learning courses provided through Swayam platform," the UGC regulation stipulates. Students, registered with the "SWAYAM", can complete their entire programme by attending classes online and take proctored examinations at the end of each semester to move to the next stage. For the proctored examinations, centers with adequate facilities will be opened in universities. The credit earned by the students will be transferred to their mother university by the one conducting the programme at the MOOCs platform.

Since MOOCs have started to multiply on the web, many discussions about their structure, effectiveness and openness have been appearing. Students, teachers, e-learning specialists, academics, the media: everyone has an opinion. However, not much commentary looks at the history of MOOCs with an approach to understanding why so many universities are creating them and massive numbers of students are joining them. A short history of distance learning and may explain much about the sudden popularity of MOOCs.

The evolution of technology and new learning experiences have always been closely related. As distance learning specialists affirm, the field of distance-learning had three main generations:

1. Correspondence study
2. Multimedia
3. Computer-mediated

The first of these distance learning models grew exponentially in Europe and United States after the Industrial Revolution, especially because a more qualified work force was needed for the factories. In addition, postal services were becoming faster, cheaper and more reliable. For example, in the 19th century, students from Australia were already able take correspondence courses from prestigious

universities, such as the London School of Economics, one of the first in the United Kingdom to offer distance education.

SWAYAM is India's national MOOC platform, designed to achieve the three cardinal principles of India's Education Policy:

- Access
- Equity
- Quality.

Class Central has been keeping track of SWAYAM's progress since the platform was first announced back in August 2014. Since its beta launch in July 2017, the platform has enrolled over 10 million learners. At the rate it's growing, in a few years, SWAYAM could become the world's largest MOOC provider, offering courses in a wide variety of disciplines from prestigious Indian institutions such as IITs and Central Universities.

In July 2019, SWAYAM's homepage and course catalog were revamped, notably to include all courses offered by NPTEL, a group comprising some of India's most prominent engineering institutions. All these courses can be taken for free. Students can also choose to pay a small fee to sit a proctored exam in an examination center in India to earn a certificate of completion. Certificates may, in turn, be used by students enrolled in India's higher education to earn academic credit for completing SWAYAM courses earmarked as credit-eligible by their universities. There are more than 500+ free online courses starting in July and August 2019.

History of MOOC :-

The term MOOC was developed in 2008 by Dave Cormier and Bryan Alexander to describe a course experiment utilizing Connectivism (Moe 2015). Massive Open Online Courses (MOOC) were introduced in 2008 as open online courses aimed at unlimited participation.

The first MOOCs emerged from the open educational resources (OER) movement, which was sparked by MIT Open Course Ware project. The OER movement was motivated from work by researchers who

pointed out that class size and learning outcomes had no established connection, with Daniel Barwick's work being the most often-cited example.

Within the OER movement the Wikiversity was found in 2006 and the first open course on the platform was organised in 2007. Ten–week course with more than 70 students was used to test the idea of making Wikiversity an open and free platform for education in the tradition of Scandinavian free adult education, Folk High School and the free school movement. The term MOOC was coined in 2008 by Dave Cormier of the University of Prince Edward Island in response to a course called Connectivism and Connective Knowledge, which was led by George siemens of Athabasca University and Stephen Downes of the National Research Council, consisted of 25 tuition-paying students in Extended Education at the University of Manitoba, as well as over 2200 online students from the general public who paid nothing. All course content was available through RSS feeds, and online students could participate through collaborative tools, including blog posts, threaded discussions in Moodle, and Second Life meetings. Stephen Downes considers these so-called cMOOCs to be more "creative and dynamic" than the current xMOOCs, which he believes "resemble television shows or digital textbooks." Other cMOOCs were then developed; for example, Jim Groom from The University of Mary Washington and Michael Branson Smith of York College, City University of New York hosted MOOCs through several universities starting with 2011 'Digital Storytelling' MOOC. MOOCs from private, non-profit institutions emphasized prominent faculty members and expanded existing distance learning offerings (e.g., podcasts) into free and open online courses.

Alongside the development of these open courses, other E-learning platforms emerged - such as Khan Academy, Peer-to-Peer University (P2PU), Udemy, and ALISON - which are viewed as similar to MOOCs and work outside the university system or emphasize individual self-paced lessons.

MOOC:-

A massive open online course (MOOC) is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses with user forums to support community

interactions among students, professors, and teaching assistants (TAs), as well as immediate feedback to quick quizzes and assignments. MOOCs are a recent and widely researched development in distance education, first introduced in 2006 and emerged as a popular mode of learning in 2012.

Early MOOCs often emphasized open-access features, such as open licensing of content, structure and learning goals, to promote the reuse and remixing of resources. Some later MOOCs use closed licenses for their course materials while maintaining free access for students.

A MOOC is an online course hosted on the web by some reputed universities where an unlimited number of participants can enroll in the course. MOOCs are scalable and characterized by massive enrollment of students for each course. The main goal of MOOCs is providing online education opportunities to anybody in the world who has internet access and they can pursue an online course without facing geographical limitations or other any other reason that is stopping them from earning a degree from traditional institutions. MOOCs adopt different learning strategies for their online courses as traditional pedagogical strategies that work in a face-to-face setting do not fit well into an online course. MOOCs are characterized by three features namely they are massive, open, and online in their course delivery. Massiveness implies infinite scalability. Virtually there can be unlimited enrollments for a course. MOOC courses are open to all those who want to take the course across the globe and the learners can access the course using any device like a desktop, PC, or a mobile device with internet connection.

Type of MOOC - cMOOC and xMOOC

As MOOCs developed with time, multiple conceptions of the platform seem to have emerged. Mostly two different types can be differentiated: those that emphasize a connectivist philosophy, and those that resemble more traditional courses. To distinguish the two, several early adopters of the platform proposed the terms "cMOOC" and "xMOOC".

- **cMOOCs** are based on principles from connectivist pedagogy indicating that material should be aggregated (rather than pre-selected), remixable, re-purposable, and feeding forward (i.e. evolving materials should be targeted at future learning). cMOOC instructional design approaches attempt to connect learners to each other to answer questions or collaborate on joint projects. This

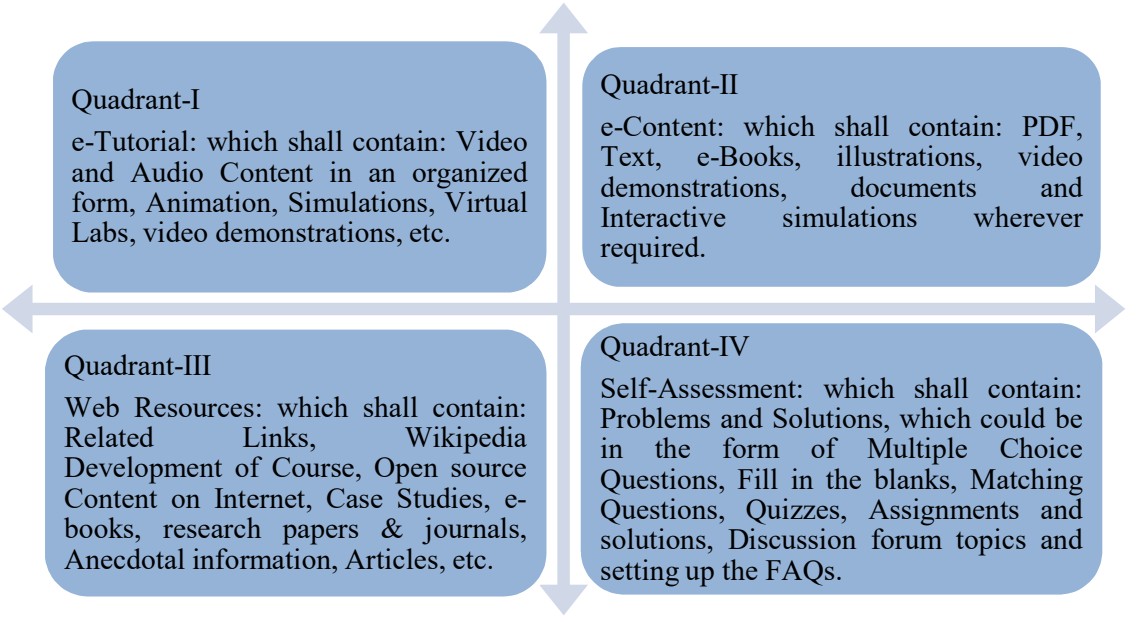
may include emphasizing collaborative development of the MOOC. Andrew Ravenscroft of the London Metropolitan University claimed that connectivist MOOCs better support collaborative dialogue and knowledge building.

- **xMOOCs** have a much more traditional course structure. They are characterized by a specified aim of completing the course obtaining certain knowledge certification of the subject matter. They are presented typically with a clearly specified syllabus of recorded lectures and self-test problems. However, some providers require paid subscriptions for acquiring graded materials and certificates. They employ elements of the original MOOC, but are, in some effect, branded IT platforms that offer content distribution partnerships to institutions. The instructor is the expert provider of knowledge, and student interactions are usually limited to asking for assistance and advising each other on difficult points.

Development process of MOOC :-

According to Ministry of Human Resource Development and Department of Higher Education, Guidelines for Development and Implementation of MOOCs.

'Four quadrant approach : The four Quadrant approach means e-learning system that has the following components:


Quadrant-I
e-Tutorial: which shall contain: Video and Audio Content in an organized form, Animation, Simulations, Virtual Labs, video demonstrations, etc.
Quadrant-II
e-Content: which shall contain: PDF, Text, e-Books, illustrations, video demonstrations, documents and Interactive simulations wherever required.
Quadrant-III
Web Resources: which shall contain: Related Links, Wikipedia Development of Course, Open source Content on Internet, Case Studies, e-books, research papers & journals, Anecdotal information, Articles, etc.
Quadrant-IV
Self-Assessment: which shall contain: Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs.

Emergence and Justification :-

In India, organizations like GOI, MHRD, etc are much conscious to use the computer based technologies in education. The NCERT's National Curriculum Framework 2005 (NCF 2005) has acknowledged that Educational Technology and ICT are significant tools to achieve constructivist learning in the new generation of Indian classrooms. It admits to a lack of detailed curricular ideas of how technology could or should fit in. "Technology should be used with more conscious educational purpose, as a cognitive tool, and as a means to facilitate more meaningful learning rather than an end in itself" - to support the constructivist teaching practices as described in the NCF, in a manner that is not superficial, but truly beneficial and meaningful to the learning environment, the learning process and the learner.

The report of the steering committee for secondary, higher and technical education for the eleventh five year plan (2007-2012) stressed the importance of ICT in education. The committee suggested a Government of India sponsored scheme for ICT. The main objective of the scheme is to establish an enabling environment to promote the usage of ICT, especially, in secondary and higher secondary education in government and government - aided schools in the rural areas. The scheme has some essentially components.

The Twelfth Five Year Plan (2012-2017) states "ICT can potentially make significant difference in improving quality. The National Policy of ICT in School Education envisions and provides for the development of a holistic framework of ICT support in the school system. Mission Mode Project (MMP) on School Education is now under the National e-Governance Plan (NeGP). This would enable comprehensive technology enablement of the school education sector." It also suggested for creating provisions for ICT in classrooms or portable facilities like a netbook/laptop/iPad and a projector with rechargeable battery, and implement ICT-integrated education.

In this context MOOC are very innovative way to reach the main goal of Educational perspective. MOOCs are widely seen as a major part of a larger disruptive innovation taking place in higher education. In particular, the many services offered under traditional university business models are

predicted to become unbundled and sold to students individually or in newly formed bundles. These services include research, curriculum design, content generation (such as text books), teaching, assessment and certification (such as granting degrees) and student placement. MOOCs threaten existing business models by potentially selling teaching, assessment, or placement separately from the current package of services.

MOOC is a model of educational delivery that is, to varying degrees, massive, with theoretically no limit to enrollment; open, allowing anyone to participate, usually at no cost; online, with learning activities typically taking place over the web; and a course, structured around a set of learning goals in a defined area of study (ELI,2013). Coursera , edX and Udacity are among the tops three MOOCs providers and have collaborations and partnerships with academic institutions across countries.

A research on building MOOCs strategy in course designing mentions, MOOCs course aimed for continuing professional development, targeted for busy working professionals with a highly interactive content usage (Conole, 2014). Of all the learning age groups working professionals are increasingly inclining towards the MOOCs phenomenon which satisfies their learning motives and adds to overall effectiveness which is reflected in their social interactions, workplaces, further professional advantage.

MOOCs have immensely contributed towards democratization of education. (Gamage et al., 2015) and seen as a disruptor based on technology adoption (Lucas, 2014) which enables lower the cost implications, offer scale beyond geographies and widen the scope for innovation in learning (Sharma, 2017).

The topic of the study is Effectiveness of massive open online courses for training teachers in higher education submitted to SNDT Women's University, Mumbai. The results of the present study show that successful knowledge building for and by higher education teachers is possible through MOOCs. MOOC is an independent variable in this study (Uppal R., 2019). An Evaluation of MOOC learning based on students perception is a paper shows results that all variables contribute positive relationship with students perception which reflect that the students possess a positive perception when learning through MOOC in that journal independent variables are learning design, learning outcome, content design,

learning attitude & student perception (Fesol S., Salam S. & Bakar N.,2017). Massive Open Online Courses or MOOCs is comprehended as a massive initiative which is related to hundreds of thousands of people, it is open which means free of charge and provided to all, across different age brackets and online which means the courses are presented through internet (Wulf et al., 2014; Macleod et al., 2015).

A good amount of research conducted thus far reveals, participants undertaking MOOCs are mostly employed, belong to mature age bracket, did complete higher education courses already, male participants outnumber females, mostly belong to developed countries and capable to afford the higher cost of education This learner segment who are benefited the most are inadequately represented among the early adopters of MOOCs (Christensen et al., 2013)

A skilled and knowledgeable workforce are any country's asset and significantly promotes the social and economic contours. India is one of the youngest countries in the world today having over 62% of nation's population in the working age group of 15-59 years and half the population in age is below 25 years (Anita et al., 2016). At the same time, India struggles through employability challenges. Launched in 2015, through 'Skill India' initiative, government aspires to reduce the skill gap and promote employability skills to add to country's prosperity. India has set a target to skill over 40 crores of its population by 2022. To achieve this steep target, India invites various stakeholders to support skill building programs across sectors (Anita et al., 2016). MOOCs is considered to be an important professional development method in India with appropriate use of technology and participation through engaging social communities (Lone, 2017).

Previous researchers and their findings raised some research questions such as:

1. Will be there any effect on pupil teacher's knowledge acquisition through MOOC ?
2. Will be there any effect on pupil teacher's retention through MOOC ?
3. Will be there any effect on pupil teacher's perception through MOOC ?

1.3.0. Statement of the problem:-

EFFECT OF MOOC ON KNOWLEDGE ACQUISITION, RETENTION & PERCEPTION OF PUPIL TEACHERS IN PEDAGOGY OF SCIENCE

1.4.0. Definitions of the term used in the study:-

1.4.1. MOOC

A massive open online course (MOOC) is an online course aimed at unlimited participation and open access via the web. In addition to traditional course materials, such as filmed lectures, readings, and problem sets, many MOOCs provide interactive courses with user forums to support community interactions among students, professors, and teaching assistants (TAs), as well as immediate feedback to quick quizzes and assignments.

1.4.2. Knowledge Acquisition

Knowledge acquisition is a method of learning, first proposed by Aristotle in his seminal work "Organon". Aristotle proposed that the mind at birth is a blank slate, or tabula rasa. As a blank slate it contains no knowledge of the objective, empirical universe, nor of itself. Knowledge acquisition is the process of extracting, structuring and organizing knowledge from one source, usually human

Experts, so it can be used in software such as an Expert System. This is often the major obstacle in building an Expert System. As a method, it is opposed to the concept of "a priori" knowledge, and to "intuition" when conceived as religious revelation. It has been suggested that the mind is "hard wired" to begin operating at birth, beginning a lifetime process of acquisition through abstraction, induction, and conception.

Knowledge Acquisition refers to an early stage of the learning process during which time a response is first established. At this point in learning, the subject will begin displaying the behavior when a stimulus is presented, so we can then say that the behavior has been acquired.

Operational Definition –

Knowledge Acquisition refers to the initial stage of the learning. In this stage, some response is being associated with some stimulus to the point where we can say the organism (person, animal, etc.) has "acquired" the response. During this stage the response is strengthened (reinforced) so that it is truly "learned". For example, if you are trying to train a rat to press a lever in response to you ringing a bell (i.e., trying to condition the rat to press the lever when and only when you ring the bell), then once the rat

presses the lever in only response to the bell, you can say the response is "acquired". You would then continue to gradually reinforce the lever pressing in response to the bell to make sure the response is strengthened.

1.4.3. Retention

Knowledge retention, as sub-discipline in knowledge management, is less covered in academic research (Levy 2011; Phaladi 2011).

Knowledge retention is about focusing on the critical knowledge that is at risk of loss and developing actionable plans to retain that knowledge (Dan 2008).

In order to ensure knowledge retention organizations make use of interviews, videotaping, structured use of subject matter experts, repositories, mentoring and apprenticeship, knowledge maps, recruiting strategies, storytelling, leveraging retiree's in-house training functions, and sharing knowledge (Peterson 2012).

Operational Definition –

The persistence to perform a learned behavior (facts or experiences) after an interval has elapsed in which there has been no performance or practice of the behavior.

Retention, in psychological or educational usage, refers to a person's ability to retain and use information. This ability is imperative in learning new skill. The ability to retain information depends on several factors such as basic intelligence and familiarity with the basic subject matter.
For instance, if a person encounters new information regarding their career field their ability to retain the new information should be high. However, if a person encounters information about a field that is totally new to them retention of the new material is not as likely.

1.4.4. Perception

Perception has sometimes been defined as "the consciousness of particular material things present to sense." Perception is as a matter of fact always a larger thing than this definition would immediately imply; because we are always aware in the "fringe," in the background of consciousness, of sense activities other than those we speak of as being perceived, especially those connected with the internal

operations of our own organism. Perception as psychologists describe it is therefore, like sensation, something of an abstraction. (James Rowland Angell,1906)

Operational Definition-

Perception can be defined as our recognition and interpretation of sensory information. Perception also includes how we respond to the information.

1.5.0. Objectives of the study

The objectives of the present study are as follows:

1. Content analysis of B.Ed. Pedagogy of Science Text Book.
2. To develop the MOOC based instructional material for pupil teacher on pedagogy of science.
3. To develop the MOOC for execution of the MOOC based classes.
4. To study the effect of MOOC on knowledge acquisition of pupil teacher of Pedagogy of Science.
5. To study the effect of MOOC on retention of pupil teacher of Pedagogy of Science.
6. To study the effect of perception of pupil teacher of Pedagogy of Science towards MOOC.

1.6.0 Hypotheses

The null hypotheses of the present study are as follows:

$H_0$1 : There will be no significant difference in mean gain knowledge acquisition scores of the pupil teacher taught through MOOC and traditional teaching.

$H_0$2 : There will be no significant difference in mean gain retention scores of the pupil teacher taught through MOOC and traditional teaching.

$H_0$3 : There will be no significant difference in mean gain perception scores of the pupil teacher taught through MOOC and traditional teaching.

1.7.0 Variable of the study

In the experimental phase of the study the following variable will be taken into consideration.

1.7.1 Independent variable:-

- MOOC

1.7.2 Dependent variable:-

- Knowledge acquisition
- Retention
- Perception

1.7.3 Extraneous variable:-

These variable will be controlled as shown in the following table:

Category of Variable	Variable	Controlling Techniques used
Subject related variable	Age	Sample selection
	Sex	
	Motivation	Rapport establishment
Environment related variable	Classroom	Rapport establishment
	Noise	Remove
	Light	Constancy
	Test Time	
	Test Administration	
Sequence related variable	Practice	Elimination
	Fatigue	
	Cooperation	Constancy

Table1.1: Method of Controlling Extraneous Variables

1.8.0 Delimitations of the Study

The study will be delimited in the following ways:

1. The study will be delimited to Agra city only.

2. The study will be delimited to B.Ed. pupil teachers.

3. The study will be confined to only Pedagogy of Science teaching.

4. The study will be delimited to xMOOC only.

1.9.0 Method of the study

This study follows a pre-test and post-test Quasi-Experimental design to examine the effect of MOOC based teaching in improving the performance of B.Ed. pupil teachers.

1.10.0 Sample of the study :-

For this study B.Ed. pupil teacher will be treated as sample. Random sampling is used in the study. In all 60 pupil teacher of pedagogy of science will be selected randomly and placed in MOOC based teaching and traditional teaching.

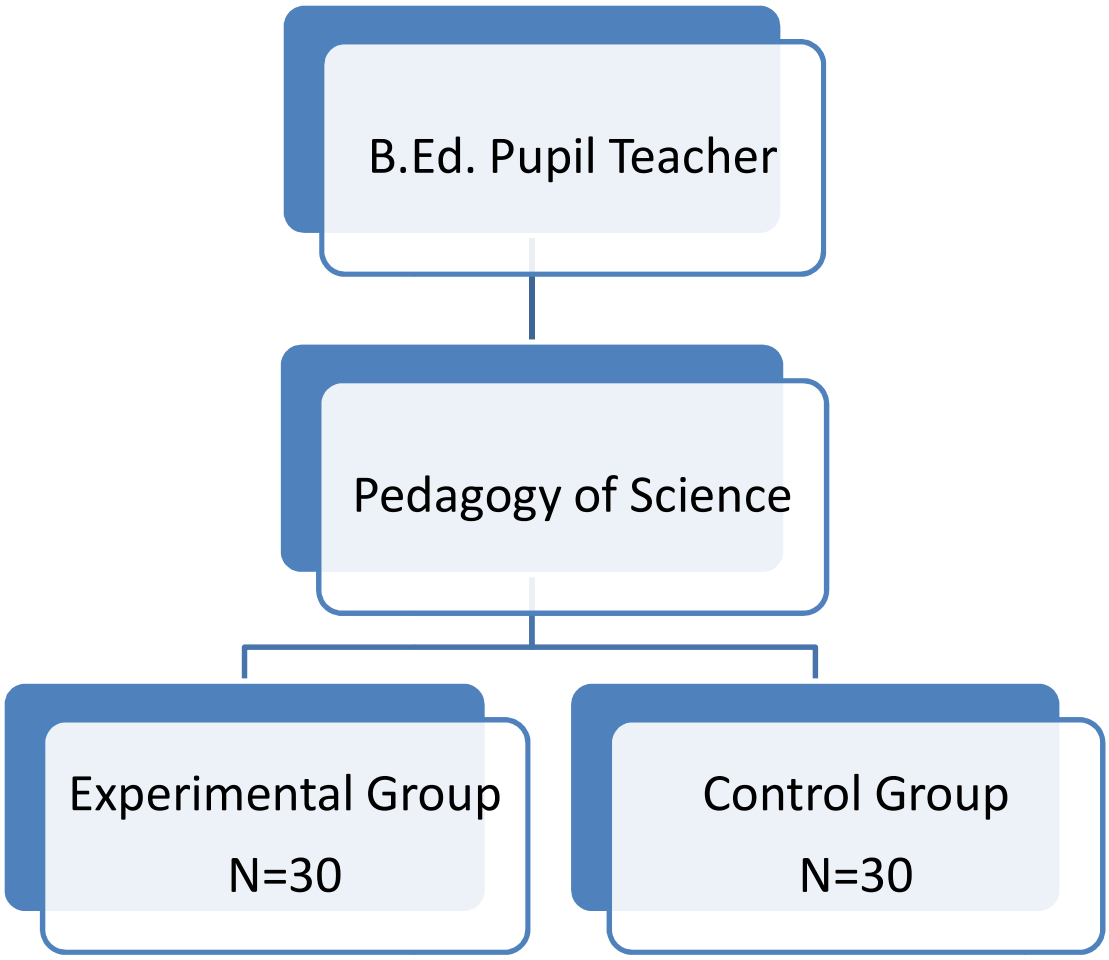


Fig.1.1: Sample Selection

1.11.0. Research design of the study

PHASE I - Content Analysis and development of MOOC

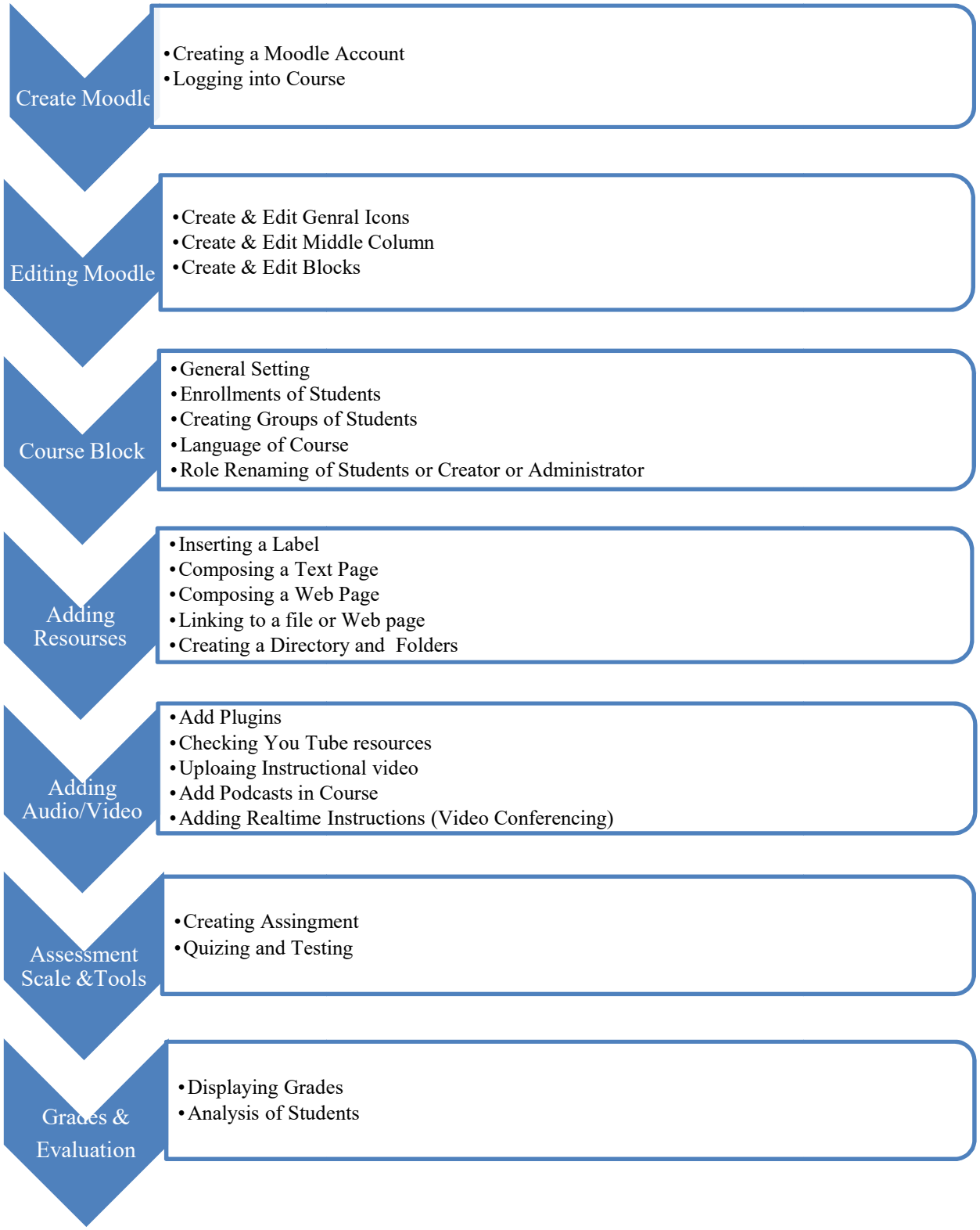


Fig.1.2: Steps of MOOC development

<table>
<tr><td colspan="8">PHASE I
Content Analysis and development of MOOC(Described in previous page, Fig. 1.2)
Major topic can be methods to teaching – learning of science in MOOC development part.</td></tr>
<tr><td colspan="8">PHASE II
Experimentation & Orientation of MOOC & Creating MOOC/Moodle Account for individual pupil teacher.</td></tr>
<tr><td colspan="4">EXPERIMENTAL GROUP</td><td colspan="4">CONTROL GROUP</td></tr>
<tr><td>Sample</td><td>Treatment</td><td>Duration</td><td>Research Tools</td><td>Sample</td><td>Treatment</td><td>Duration</td><td>Research Tools</td></tr>
<tr><td>B.Ed. Pupil Teacher (N=30)</td><td>Orientation of MOOC</td><td>10 Days (1 Hour per Day)</td><td>Perception Scale</td><td>B.Ed. Pupil Teacher (N=30)</td><td>Orientation of MOOC</td><td>10 Days (1 Hour per Day)</td><td>Perception Scale</td></tr>
<tr><td colspan="8">PHASE III
Experimentation & Assessment the effect of MOOC.</td></tr>
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<tr><td>B.Ed. Pupil Teacher (N=30)</td><td>Execution of developed MOOC</td><td>40 Days (1 Hour per Day)</td><td>1.Knowledge Acquisition Scale
2.Retention Scale
3.Perception Scale</td><td>B.Ed. Pupil Teacher (N=30)</td><td>Teaching through Traditional Approach</td><td>40 Days (1 Hour per Day)</td><td>1.Knowledge Acquisition Scale
2.Retention Scale
3.Perception Scale</td></tr>
</table>

Table1.1: Research Design of Study

1.12.0. Administration of Tools

1. Knowledge Acquisition Scale (Self Constructed)
2. Retention Scale towards MOOC(Self Constructed)
3. Perception Scale towards MOOC(Self Constructed)

1.13.0 Statistical techniques

There will be used appropriate descriptive & inferential statistical techniques in the present study. Following statistical techniques will be used for the study :

1. Mean
2. Standard Deviation
3. T-test

1.14.0 Significance of the study

The revolution in technology is influencing the concepts and practices of education system worldwide. In the developing societies, more specifically in the societies of Asia Pacific, multi-technologies co-exist.

On the one hand, there are traditional educational institutes untouched by waves of technological revolution whereas on the other hand there are also some educational institutions with state of the art facilities of education technology. There are still many institutes where the teaching /learning process is limited to chalk and blackboard based lectures where as there are institutes having Internet, and multimedia system. The broad disproportion in teaching learning process exists mainly due to lack of vision, interest, financial paucity and other factors among the educational institutions. There is a great need to develop a new policy relating the application of MOOC supported education for better delivery of education, easier access to a number of knowledge sources, sharing of opinions, views, attitudes etc. in the field of Education. The advocacy of MOOC in all levels of educational institutions is necessary for personal and national growth. Education along with MOOC can be viewed as an instrument of change, of growth and development of the country to carry on with the advanced countries of the world.

The revolution in MOOC is transforming the way the knowledge is stored and exchanged, touching the very core of culture. This is the age of information explosion in which large amount of information is being generated at every moment. The ability to collect, store, and disseminate the large amount of information needs applications of new technologies. New information has become very vital tool or basis of power, possession of which reveals political, economic and social advantages over other groups.

Technological advancement is also emerging equally fast as the expectation level to cope with the large amount of information or to meet the challenge of ever increasing amount of information.

In these circumstances it is worthwhile to understand the application and utilization of MOOC in teaching, learning and research. The availability of the facilities does not ensure its application. Only the effective and efficient application of available MOOC facilities will bring about changes in the academic scenario. As the study aims at understanding the level of application of MOOC and services for teaching,

learning and research it is expected that the result will bring to light the how far the university education system is applying modern technologies for their activities.

The study also aims at understanding the utilization of MOOC and services in universities. Hence, it is expected that the result of the study will help the administrators and educators to take necessary steps to ensure optimum utilization of MOOC.

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